MISCELLANEA ZOOLOGICA HUNGARICA
Tomus 7. 1992. p. 5–8

Helminth parasites of amphibians of the Lake Balaton area

by
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(Received 22 January, 1992)

Abstract: Examinations of water bodies of the Lake Balaton area have revealed fourteen species of adults and four species of larval trematodes and a species of Acanthocephala. Of the trematodes three species: *Skrjabinoeces breviansa*, *S. volgensis* and *Halipegus kessleri* were found for the first time in Hungary. Histological changes caused by *Brandesia turgida* were also described.
Key words: Helminth parasites, amphibians, Lake Balaton, Hungary.

Helminth parasites of Hungarian amphibians have been examined from various parts of this country by different authors since the end of the past century (Margó 1879, Pachinger 1888, Edelényi 1942, 1960, Sey 1964). These earlier examinations have revealed the major part of the species which were recovered in the course of the present investigations. In the area of Lake Balaton this is the first report on helminth parasites obtained from amphibians.

Materials and methods

The test material has been collected from two different places. One of them is the western part of Lake Balaton (Bay of Keszthely) and the other is the so-called Kis-Balaton which is the latest remains of a then extended marshy area. These two water bodies have been connected with each other. Of the *Rana* spp. (*Rana ridibunda*, *R. lessonae* and their hybrid *R. esculenta*) population seventy-three specimens and three specimens of *Triturus vulgaris* were collected from Kis-Balaton and thirty-nine specimens of *Rana* spp. were collected from the Bay of Keszthely. Frogs were narcotized and their organs were examined under dissecting microscope. After fixation they were stored in 70 % alcohol and later were stained in carmine and whole mounts were prepared by the usual method. Cysts of *Brandesia turgida* were embedded in wax and sections were stained with hematoxylin and eosin.

Results and discussion

The helminth parasites obtained from amphibians of the Lake Balaton area are summarized in Table 1. The major part of the parasites recovered is generally distributed either in Hungary or in other European countries. Three of them (*Skrjabinoeces breviansa*, *S. volgensis*, *Halipegus kessleri*), however, are new locality results. These species and the histological changes caused by *Brandesia turgida* are described shortly below.

Table 1. List of helminth species of amphibians of the Lake Balaton area

Species	Kis-Balaton	Lake Balaton
Trematoda		
Diplodiscidae		
Diplodiscus subclavatus	+	+
Opisthodiscus diplodiscoides	+	-
Plagiorchiidae		
Opisthioglyphe ranae	-	+
Pneumonoeces asper	+	-
Pneomonoeces variegatus	+	+
Skrjabinoeces similis	+	-
Skrjabinoeces breviansa	+	-
Skrjabinoeces volgensis	+	-
Pleurogenes claviger	-	+
Brandesia turgida	+	-
Pleurogenoides medians	+	+
Prosotocus confusus	+	+
Halipegidae		
Halipegus ovocaudatus	+	-
Halipegus kessleri	+	-
Trematoda larvae		
Codonocephalus urnigerus	+	+
Strigea sphaerula	+	-
Neodiplostomum spathoides	+	-
Tylodelphis excavata	+	-
Acanthocephala		
Acanthocephalus ranae	+	+

Skrjabinoeces breviansa Sudarikov, 1950
(Fig. 1)

Diagnosis: Body length 3.82-4.76 mm, body width 0.98-1.26 mm. Tegument without spines. Oral sucker 0.30-0.34 mm in diameter; praepharynx absent, pharynx spherical, 0.14-0.18 mm in diameter. Ventral sucker 0.17-0.21 mm in diameter. Testes oval, situated diagonally, having same measurements: 0.62-0.71 x 0.49-0.52 mm. Ovary spherical, 0.34-0.40 mm in diameter. Eggs measure 0.031 x 0.019 mm.

Habitat: lung

Skrjabinoeces volgensis Sudarikov, 1950
(Fig. 2)

Diagnosis: Body length 4.22-4.67 mm, body width 0.98-1.32 mm. Tegument covered with spines. Oral sucker 0.40-0.42 mm in diameter; praepharynx absent, pharynx 0.12-0.14 mm in diameter. Ventral sucker 0.32-0.34 mm in diameter. Testes oval or spherical having same measurements: 0.26-0.29 x 32-0.36 mm. Ovary oval, 0.35- 0.40 mm in diameter. Eggs measure 0.030 x 0.020 mm.

Habitat: lung

Halipegus kessleri (Grebnitzky, 1872)
(Fig. 3)

Diagnosis: Body length 1.52-1.83 mm, body width 0.46-0.49 mm. Tegument without spines. Oral sucker 0.12-0.15 mm in diameter. Ventral sucker 0.32-0.37 mm in diameter. Testes oval, slightly diagonal, measure 0.14-0.16 x 0.06-0.09 mm. Ovary 0.09-0.12 mm in diameter. Egg measures: 0.043-0.049 x 0.011-0.018 mm with filaments.

Habitat: mouth cavity.

Brandesia turgida (Brandes, 1888)

This species is one of the earliestly described trematodes from frogs in Hungary (Rátz 1913). At the same time it seems to be one of the rarer flukes because it was not discovered during the subsequent examinations (Edelényi 1942, 1960, Sey 1964). These flukes are intestinal parasites located in cysts at the junctions of the stomach and the intestine, forming clearly cut histological changes. Cysts are highly elevated from the surface of the gut. They are spherical measuring 1.15 mm in diameter (Fig. 4). Flukes are usually attached to the inner surface of the cyst by oral sucker while the posterior body end stretches the lumen of the intestine (Fig. 5). Eggs are discharded through the genital pore into the lumen of the host and they empty with the content of the intestinal tract to the host's environment (Fig. 6).

Oshmarin & Oshmarin (1989) have reported the absence of the opening at the oral sucker and as a consequence of this, they supported that the nutriments are taken up by these flukes through the tegument. Our observations, however, showed that *B. turgida* has mouth opening (Fig. 6) and they probably take nourishment as other flukes do.

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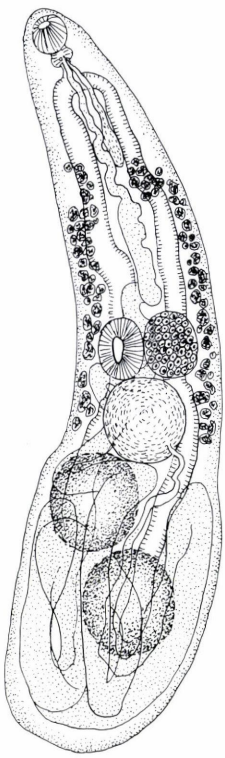

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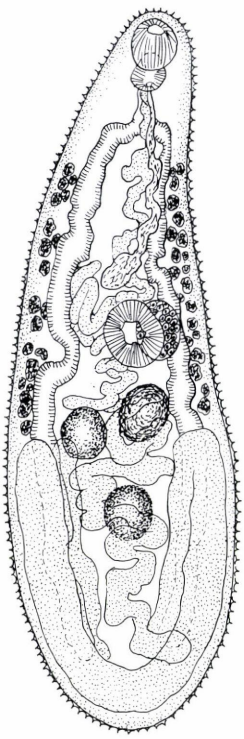

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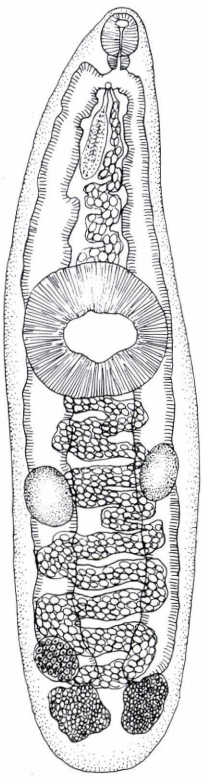

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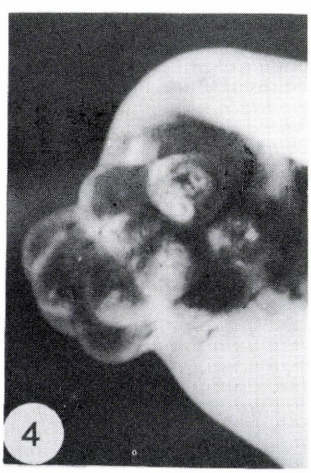

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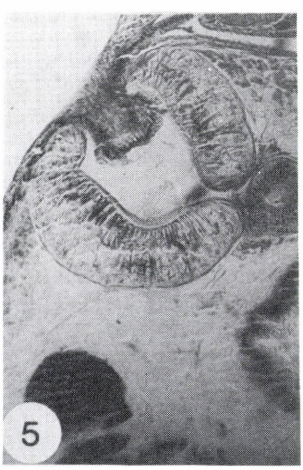

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Fig. 1. *Skrjabinoeces breviansa*, ventral view; Fig. 2. *Skrjabinoeces volgensis*, ventral view; Fig. 3. *Halipegus kesslcri*, ventral view; Fig. 4. Cysts with *Brandesia turgida* at the junction of stomach and intestine; Fig. 5. Anterior extremity of *Brandesia turgida* with oral sucker attaching to inner surface of cyst-wall; Fig. 6. Position of posterior extremity of *Brandesia turgida* with eggs excreated into intestinal lumen